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Simone Taffe, Sonja Pedell & Andrea Wilkinson

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VISUAL ESSAY



Reimagining ageing: insights from teaching co-design methods with designers, seniors and industry partners

Simone Taffe^a, Sonja Pedell^a and Andrea Wilkinson^b

^aFaculty of Health, Arts and Design, Swinburne University of Technology, Melbourne, Australia; ^bLUCA School of Arts, Genk, Belgium

ABSTRACT

Interest in co-design is growing in the design literature, as is problem-based learning in design education, yet little research exists on teaching co-design in collaboration with industry partners. This leaves design educators wondering ‘what is the influence of teaching co-design with actual industry partners on student learning?’ This study discusses a case study where two industry partners were invited to collaborate with seniors and multi-discipline design students to redefine ageing. Both projects involved co-designing future assistive technologies. The results demonstrate that when design students and seniors co-designed prototypes to de-stigmatize images of ageing, the results delighted our end-users. The findings suggest combining co-design methods with health-related industry briefs offers an immersive environment for design students to learn and apply creative strategies to propose novel designs, in new complex domains. As designers are not experts in health, co-design methods give designers tools to leverage expert end-user knowledge to produce innovative, high impact designs – hence opening up new work domains.

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Co-design; participatory design; education; problem-based learning

Introduction

In recent years, there has been an evolution within health care that has seen many devices and services that were once confined to medical locations expand into homes, where the aesthetics do not suit the home environment (Bitterman 2011; Botero and Hyysalo 2013). Seniors wanting to live independently in their own homes, in need of home modifications and assistive technologies are often faced with designs that are stigmatizing and consequently not used (Lo Bianco, Pedell, and Renda 2016). However, in this domain, elegant and appropriate design, while appreciated, is rare. There is a need for designers to fundamentally re-imagine ageing, address negative stereotypes and redesign a positive ageing landscape (Coleman 2015; Dankle 2017; Hirsch et al. 2000).

While the benefits of learning-by-doing in design education are known, typically design lecturers continue to present hypothetical briefs where the difficult, practical project constraints are often ignored in favour of encouraging students' self-expression (Schön 1983). Co-design can mediate between traditional design ambitions and the need for innovative solutions on real-life problems as it stresses the importance of including end-users in the design process with the aim of harnessing their contextual knowledge and creative ideas for appropriate design solutions (Kelly and Matthews 2014). Rather than the apprentice/master model of design education, this study used problem-based learning methods to guide students through the complexities of an industry brief, refocusing student learning to a particular scenario, rather than on curriculum content (Roberts 2004). This paper examines the influence of teaching participatory processes to master of design students, across a variety of design disciplines.

Materials and method

The following co-design case study took place in an Australian university with an established Master of Design program (41 students enrolled in two-year coursework building on their four-year Bachelor of Design degrees from overseas universities). The study took place in a new unit, called 'inclusive and participatory design'. Problem-based learning was not a standard part of the Master of Design curriculum, however, as the authors have extensive experience using problem-based learning, they decided to introduce real-world clients and scenarios in this class. Two industry clients briefed masters' students on the complexity of designing products for ageing, challenging the students to design elegant solutions, delighting seniors. A lecturer taught the students the latest theory and practice on co-design principles, where designers work *with* end-users rather than *for* them, co-creating outcomes together, suiting end-users' needs and preferences. The director of the university's Living Lab contributed to the co-design process acting as an ageing expert, briefing the students on issues associated with designing for seniors and critically analysing previous failed medical devices. Six seniors, from an urban setting, five design academics and 24 multi-discipline and multi-cultural design masters' students took part in the workshops. Our two clients, Leef and Availcare were chosen based on existing collaborations with the university's Future Self and Living Lab, both advocating for non-stigmatized ageing health products and services.

We briefed the students to intuitively design an outcome based on the clients' goals. Then the students created co-design activities to test out their design ideas and gather a rich picture of the seniors' needs and preferences. At four co-design workshops within a 12-week semester, the seniors were invited into the university to co-create ideas that suited them. The students devised a range of co-design activities where the idea was to have fun with everyday materials to break down barriers between people and learn about the senior's

needs and preferences. The students followed an iterative process of designing and refining design ideas with several weeks in between for reflection, based on their findings from each workshop.

Figure 1 shows four of the students' co-design toolkits.

- (1) *Persona and Scenario* shows possible scenarios that could happen in life to trigger conversations about seniors' own reality.
- (2) *Leaf Mapping* is an interactive tool to allow participants to show what sort of assistive products they would buy and to talk about whether they would buy them online or in store.
- (3) *Ping Pong Throw* involved participants throwing a ping pong ball into a jar intuitively choosing a jar to represent how they like to spend their recreation time.
- (4) *Wheel of Fortune* was inspired by seniors' comments that life 'throws you curve balls'. A wheel is spun and the participant suddenly has a stroke or develops dementia and must then quickly buy assistive products and make home adjustments.

Two note takers recorded the workshop conversations and photographed the outcomes. The data was compiled into a chronological case report and thematically analysed. Words were highlighted and colour coded based on Yin's case study approach (1981). All participants completed a reflection questionnaire, and insights were sorted into four perspectives.

Results

Our industry partners had been working for many years with ageing assistive technologies and were delighted with three of the co-designed solutions: (1) the GrabRail concept that solves the slipping hazard of metal grab-rails when wet;



Figure 1. Four co-design toolkits designed by the design students.
Source: Photos, first author.

(2) the Leef Community ageing health forum expressing seniors' desires 'we care; we share; we connect; we live well'; (3) the accessorized futuristic walking stick, featuring a flashlight, a GPS help button and an alarm. These three projects are detailed here. Then, four perspectives on the co-design process from the students, seniors, industry partners and design academics are outlined.

GrabRail toolkit aimed to improve seniors' experience of shopping for assistive technologies. The designer first developed a mood board activity in which the seniors and the designer co-created a visual picture of what sort of grab-rail they would like in their homes (Figure 2). While busy making a mood board, they discussed grab-rail add-ons, such as textures, shapes and materials for extra grip and visual appeal. Through this activity, the designer came to understand how the seniors would like their shopping experience to be. They wanted to be independent, making their own choices. They did not want the clinical impersonal nature of current assistive products. They preferred products to have a minimalist style with cool and natural colours, and materials suggesting quality and luxury. In response to this, the interior design student created a *GrabRail* shopping iPad app that would allow seniors first to choose the product of their choice, deciding on colours, textures, surfaces, then to see their choice simulated in a home environment and finally to pay for it online (Figure 3). This prototype leads customers to what they are looking for, based on their preferences.

Leef Community is a proposal for seniors to connect, share and live well using the Internet as a forum to give back to the community. The student engaged the seniors in two co-design activities in which seniors were invited to reimagine ageing and independent living solutions. One used personas made from hand painted corks with faces attached as a prompt for free and open discussion, while the other used sticky notes to record ideas about how the seniors like to access information about their health (Figure 4). These activities were playful and game-like. The seniors noted that they appreciated the effort that had gone

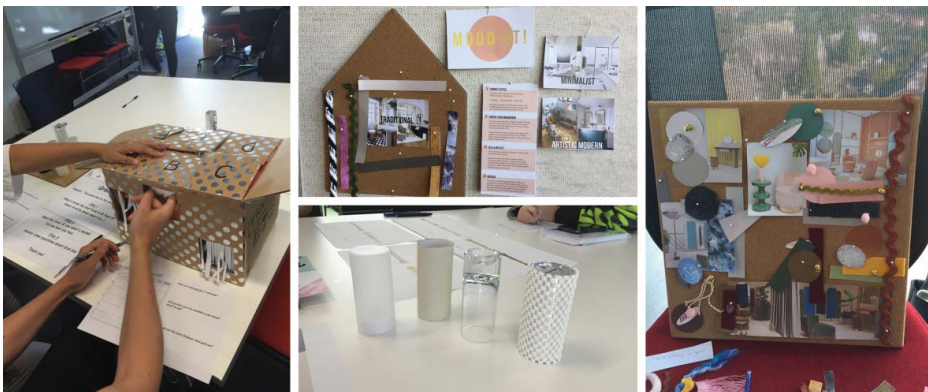


Figure 2. Mood board activity to develop the *GrabRail* shopping iPad app.
Source: Photos, first author of Alex Swilo's activity.

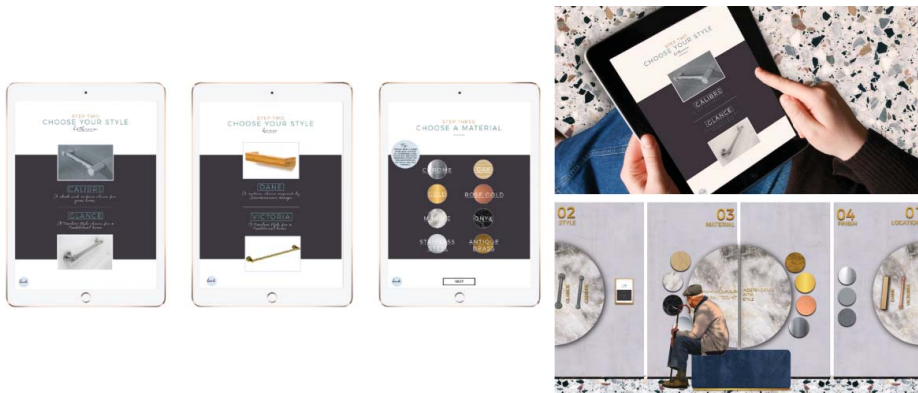


Figure 3. Screen shots from the prototype design for the GrabRail shopping iPad app.
Source: Images, Alex Swilo class report.

into the design of these activities, and that this made them want to contribute their ideas. The findings revealed that the seniors felt scared, embarrassed and frustrated when accessing information about ageing well, especially via the Internet. The ideal service was noted as having a conversation with someone who could give personalized information so they could feel cared for and accountable to someone. The most surprising finding was that the seniors expressed a desire to give back to the community, rather than find out more information for themselves. They want to share their experiences and help others. In response to these findings through the co-design process, the student designed an online information service called Leef Community where seniors could connect with each other, share their knowledge of products and services and support others in need (Figure 5).

Walking stick: A fashion design student trialled a range of co-design activities in order to visualize the future of walking sticks. The student began by creating

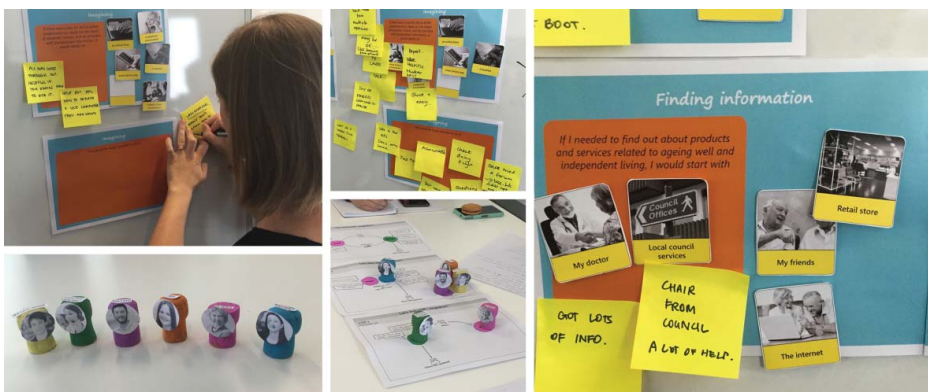


Figure 4. Co-design activities to understand seniors' preferences for accessing health information.

Source: Photos, Kate Ramchurn class report.

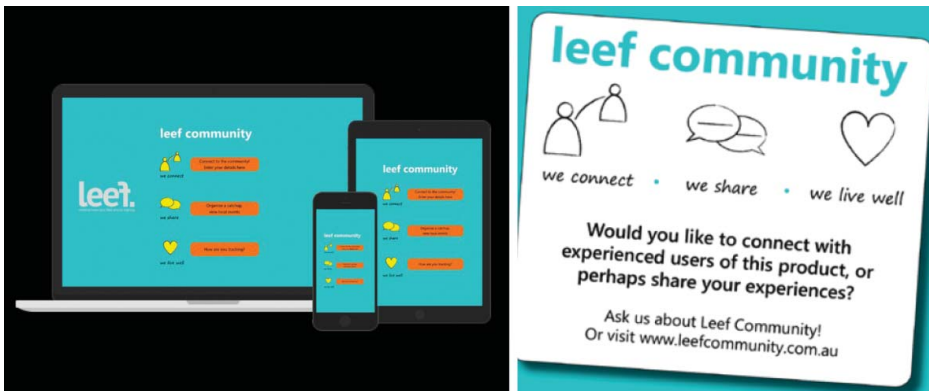


Figure 5. Prototype designs for Leef Community website and online presence.
Source: Images, Kate Ramchurn class report.

co-design activities to accessorize walking sticks with different colours and materials to match outfits and moods, asking seniors to touch and feel different materials and to think aloud about why they chose different materials (Figure 6). Cut-and-paste craft activities and voting games helped establish what materials seniors would like, for example, 50% said they would like a stick made from wood rather than steel or rubber. More importantly, the designer uncovered that the walking stick itself needed reimagining when listening to actual end-users. The seniors talked about the features they would really like as part of their walking stick. Thirty-two per cent of seniors said they would like a flashlight for seeing the edge of the road in the dark, 27% asked for a GPS in case they lost their way or needed help and 27% wanted an alarm button that linked to a smart phone app to notify family or friends in an emergency (Figure 7).



Figure 6. Co-design toolkit to learn from seniors their walking stick preferences.
Source: Photo, Xia Zeng class report.



Figure 7. The designer's solution for an accessorized walking stick with connecting app.
Source: Images, Xia Zeng class report.

Co-design participants' perspectives on reimagining ageing

Design students' perspectives

The students were thrilled to learn professional skills and co-design end-user research methods. Several were pleased by the excellent standard of their own outcomes. The three students featured in the findings above expressed surprise at how different a co-design process is to traditional design where they would have researched the end-user from home via the Internet. Co-design with seniors led to different designs from designer-led intuitive design. The GrabRail iPad shopping app, the Leef Community and the accessorized walking stick design ideas would not have surfaced without co-design methods. Several were excited by the thought of continuing working with co-design methods into the future.

Seniors' perspectives

The seniors appreciated being involved and were impressed with how much effort and careful thought the students had put into reframing ageing. Two seniors clearly did not just want to talk about their needs, they wanted the opportunity to give back and feel useful. Many shared their broader life experience, joking with the students that life throws you curve balls, urging them to start preparing for unexpected life events. For example, once visible signs of illness appear, you are stigmatized, unable to work and earn money.

Industry partners' perspectives

Our clients' expectations of the students' design work were exceeded. One client offered to mentor several of the students to commercialize their ideas in the future. Both clients and our ageing expert agreed that the students' design outcomes were highly innovative due to user involvement facilitated by the co-design, compared to design-led only processes. Despite our clients having worked in this area for years, they were surprised by the students' findings from

co-designing with seniors, for example, metal grab-rails being a slipping hazard when wet hands grab them, and felt that a Facebook-like community for seniors would be welcomed.

Design educators' perspectives

As educators, we acknowledge that the extra time and effort to arrange co-design collaboration in classes was worthwhile, where adopting a flexible, 'follow me' coaching style of teaching is necessary to address the complexities that arise in real-life problems. Balancing student learning with industry expectations was also a challenge, as the merit and purpose of the process was only apparent to both parties towards the end. The open-endedness of industry projects in combination with co-design processes is something that one cannot pre-plan for as a teacher.

Discussion

Many design educators prefer hypothetical briefs over industry briefs due to the complexities of involving clients in the classroom (Roberts 2004). We show that confronting industry project constraints and listening to the end-users' views sparked creative outcomes, enhancing student learning. It is important to choose clients who are open to innovation, and who value an open brief, allowing design students to steer the project. Clients also need to agree to the students owing the Intellectual Property of their designs until the university semester has finished and then both parties are free to negotiate further refinement and production of the designs where the clients may mentor the students with business and internship opportunities. While co-design is acknowledged to be useful for designing appropriate products for end-users, some doubt its value, believing that designers' creative inspiration will be ruined by the complexities of having to include end-users' views (Large 2001). Our findings dispel this myth, as the design outcomes produced were deemed innovative by our industry partners. While some designers acknowledge that their co-design projects have failed to achieve an outcome at all due to co-design's inherent complexities (Lundmark forthcoming), we show that outcomes are achievable with co-design. In fact, combining co-design processes with industry briefs helped steer the students through the layers of complexity to achieve inspired design outcomes working through the results.

Conclusion

This study shows that involving end-users in industry co-design projects in tertiary education leads to promising design outcomes and student learning opportunities despite the complexity of the problem. Industry co-design briefs influenced design student learning positively in the following ways: (1) Students learnt new evidence-based design skills, giving them freedom to creatively

express themselves based on actual preferences of seniors, realizing intuition has its limitations. (2) Students gained confidence that their designs would suit the seniors' needs, also learning client and project management skills; (3) Seniors shared their expertise with the young designers, contributing to their education; (4) Industry partners mentored and created partnerships with the young designers, finding innovative design solutions worth commercializing. The small scale of this study is a limitation. The implications of the findings suggest organizing co-design activities with actual clients and seniors is worth lecturers' time and effort as the outcomes may exceed stakeholders' expectations. We argue that combining co-design processes with industry partners helps students navigate complex project demands, achieving innovative design outcomes that de-stigmatize medical devices for seniors.

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Disclosure statement

There is no potential conflict of interest in the research presented in this paper.

Notes on contributors

Simone Taffe is associate professor in communication design at Swinburne, Melbourne, Australia, lecturing in branding and participatory design. Simone's research builds on 15 years of experience in the design industry, being involved in large-scale branding projects. This experience made Simone appreciate the importance of including end-user views for the acceptability of design projects. Simone's research addresses how co-design influences the design process. Simone is an award-winning teacher, with several Australia-wide awards for the innovative use of problem-based learning in design education.

Sonja Pedell, associate professor, is director of Swinburne's Future Self and Design Living Lab, where her research contributes extensive knowledge of human-computer interaction (HCI) and research methods to the co-design and development of innovative technologies and services. She is also Department Research Director for Swinburne's Department of Communication Design and Digital Media Design. Sonja's research interests include user-centred design methods, scenario-based and mobile design, domestic technology development and the design of engaging novel technologies for various user groups, in particular for the ageing population and people living with dementia.

Andrea Wilkinson (USA, BE) is a designer, researcher and lecturer who teaches across the graphic and interaction design areas at the LUCA School of Arts, Genk, Belgium. Her research focuses on designing together and for people with dementia, UI, narratives and designing for individuals. She is currently working on a PhD degree at the University of Leeds looking at the potential and impact of designing for one.

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